A Surplus of Ambition: Can Europe Rely on Large Primary Surpluses to Solve its Debt Problem?

Tables and Figures

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Table 1: Primary balances necessary to achieve debt targets by 2030 and underlying assumptions

Country	Real GDP Growth (2019)	Inflation (2019)	Interest rate-growth differential (2013-19, average)	Debt Target in 2030	Required cyclically adjusted primary balance (2020-30)
Belgium	1.60%	1.20%	1.00%	60%	3.80%
France	1.90%	1.80%	-0.10%	60%	2.90%
Greece	3.30%	1.30%	1.00%	60%	7.20%
Ireland	2.70%	1.80%	0.40%	60%	5.60%
Italy	1.20%	1.50%	2.40%	60%	6.60%
Japan [c]	1.10%	2.00%	-2.00%	200%	7.30%
Portugal	1.80%	1.50%	1.20%	60%	5.90%
Spain	1.60%	1.50%	2.20%	60%	4.00%
United Kingdom	2.50%	2.00%	-0.30%	60%	4.20%
United States	2.90%	2.10%	-1.80%	60%	4.10%
Av. for AEs.					3.60%
Av. for G20 AEs					3.80%
Av. for EMs					0.50%

Sources: [a]IMF (2013) Table 12a and WEO database (April 2013) 13b; [b] IMF (2013) Tables 13a and 13b. [c] The gross debt target for Japan corresponds to a net debt of 80% of GDP.

Table 2: Nonoverlapping primary surplus episodes

3 % of GDP			4% of GDP			5% of GDP		
5-yr	**8-yr**	**10-yr**	**5-yr**	**8-yr**	**10-yr**	**5-yr**	**8-yr**	**10-yr**
BEL1998*	BEL1997*	BEL1995*	BEL1998*	BEL1997*	BEL1995*	BEL1998*	BEL1997*	BEL1995*
BRA2004*	CAN1997*	CAN1996*	CAN1997*	CAN1997*	IRL1991*	CAN1997*	NOR2001	NOR1999
CAN1997*	CHL1991	DNK1984	CHL2004	DNK1984*	NOR1999	CHL2004	SGP1990*	SGP1990*
CHL1991	CHL2001	DNK1999	DNK1985*	DNK2000	NZL1994	DNK1985*	SGP2005	
CHL2004	DNK1984*	FIN1999	DNK2004	FIN2000*	SGP1990*	IRL1996*		
DNK1985	DNK2000	IRL1991*	FIN1998*	IRL1993*		NOR1981		
DNK1997*	FIN2000*	ITA1993*	IRL1988*	ITA1995*		NOR2004		
DNK2004	GRC1994*	KOR1993	IRL1996*	NOR2001		NZL1993		
FIN1976	IRL1993*	NOR1999	ITA1996*	NZL1993		PAN1994*		
FIN1998*	ITA1995*	NZL1994	NOR1981	SGP1990*		SGP1991*		
GRC1996*	KOR1995	SGP1990*	NOR2004	SGP2005		SGP2004		
HKG2007	NOR2001	TUR1999*	NZL1993	TUR1999*		SWE1986*		
IRL1988*	NZL1993		NZL2002					
IRL1996*	SGP1990*		PAN1994*					
ISL2003	SGP2005		SGP1991*					
ISR1986*	SWE1984*		SGP2004					
ITA1996*	TUR1999*		SWE1986*					
KOR1988			TUR2002*					
KOR1999								
LUX1997								
MEX1991								
NLD1996*								
NOR1981								
NOR2004								
NZL1993								
NZL2002								
PAN1994*								
PAN2005*								
PER2004								
PHL2004*								
SGP1991*								
SGP2004								
SWE1986*								
SWE1997*								
THA1991								
TUR2002*								
A. Number of episodes								
36	17	12	18	12	5	12	4	3
B. Total number of periods in the sample								
235	185	113	235	185	113	235	185	113
C. Total number of periods of high or rapidly growing debt								
77	26	26	77	26	26	77	26	26
D. Number of episodes that overlap with periods of high or rapidly growing debt								
18	10	6	11	8	3	7	2	2
E. Share of episodes that overlap with periods of high or rapidly growing debt (D/A)								
0.5	0.59	0.05	0.61	0.67	0.6	0.58	0.5	0.67
F. Share of periods of high or rapidly growing debt that overlap with episodes (D/C)								
0.23	0.39	0.23	0.14	0.31	0.12	0.09	0.08	0.08

The year refers to the beginning of the episode (for instance, in column 1, BEL1998 indicates an episode that starts in 1998 and ends in 2002, and in column 3 BEL1995 indicates an episode that starts in 1995 and ends in 2005 * Denotes episodes which follow periods of high or rapidly growing debt. Tables 3-5 in Eichengreen and Panizza (2014) also report average values for the primary surplus in each episode.

Table 3: Probability of observing an episode and a period of high or growing public debt

	Probability of observing an episode		Probability of observing a period of high or growing public debt	
Episode group	Unconditional	Conditional on periods of high or growing public debt	Unconditional	Conditional on episodes
5 years 3%	15.30%	23.4%**	32.80%	50.0%***
5 years 4%	7.70%	14.3%***	32.80%	61.1%***
5 years 5%	5.10%	9.1%**	32.80%	58.3%***
8 years 3%	9.20%	38.5%***	14.10%	58.8%***
8 years 4%	6.50%	30.8%***	14.10%	66.7%***
8 years 5%	2.20%	7.70%	14.10%	50.00%
10 years 3%	10.60%	23.1%**	23.00%	50.0%***
10 years 4%	4.40%	11.50%	23.00%	60.0%*
10 years 5%	2.70%	7.70%	23.00%	66.70%

The asterisks indicate whether the differences between the conditional and unconditional probabilities are statistically significant (significance levels are obtained by running probit regressions) *** p<0.01, ** p<0.05, * p<0.1

Table 4: Primary surpluses and economic variables

	(1)	(2)	(3)	(4)	(5)	(6)
Pop growth	4.403	1.220	7.630*	3.583	2.707	6.410
	(4.627)	(2.989)	(4.427)	(2.741)	(4.340)	(5.208)
GDP growth	4.153**	3.619***	3.680*	2.978**	4.598**	6.118***
	(2.067)	(1.405)	(2.049)	(1.348)	(2.048)	(2.172)
Ln(GDP)	-0.023	-0.031*	-0.019	-0.028*	-0.027	-0.010
	(0.023)	(0.016)	(0.023)	(0.016)	(0.023)	(0.022)
Log(infl)	0.067*	0.037	0.059*	0.028	0.063	0.072*
	(0.039)	(0.025)	(0.036)	(0.022)	(0.039)	(0.042)
Debt-to-GDP	0.164*	0.161**			0.221**	0.148
	(0.096)	(0.073)			(0.097)	(0.103)
Credit to priv. sect.	-0.045	-0.029	-0.061	-0.043	-0.051	-0.061
	(0.078)	(0.060)	(0.080)	(0.062)	(0.080)	(0.085)
Current acc. bal.	1.817***	1.389***	1.849***	1.369***	1.855***	1.669**
	(0.691)	(0.478)	(0.698)	(0.470)	(0.710)	(0.730)
Log(GDP PC)	0.101***	0.058**	0.109***	0.061**	0.100***	0.112***
	(0.038)	(0.026)	(0.040)	(0.026)	(0.038)	(0.043)
Unemployment	-0.169	-0.128	0.167	0.178	-0.298	-0.234
	(0.764)	(0.565)	(0.773)	(0.568)	(0.799)	(0.782)
Trading partners' growth	7.687**	6.457***	7.021**	6.171***	7.825**	
	(3.029)	(2.217)	(3.082)	(2.174)	(3.167)	
Trading partners' primary balance	4.577*	1.773	6.308**	3.238*		7.113**
	(2.384)	(1.620)	(2.590)	(1.762)		(2.834)
Real exch. rate	1.226		1.165		1.009	1.483
	(1.136)		(1.182)		(1.147)	(1.293)
Trade openness	0.125*	0.009	0.142*	0.007	0.106	0.168**
	(0.070)	(0.039)	(0.074)	(0.042)	(0.066)	(0.074)
Neighbours' primary balance					3.806	
					(2.911)	
World growth						-2.147
						(5.598)
Observations	173	203	173	203	173	173
Sample	AE&EM	AE&EM	AE&EM	AE&EM	AE&EM	AE&EM

Probit Regressions, the dependent variable takes value one for five year episodes with a primary surplus of at least 3% of GDP. The table reports the marginal effects estimated at the mean of the dependent variable (variables are scaled such that 0.0x means x%). Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 5: Primary surpluses and political variables

	(1)	(2)	(3)	(4)
Pol. Syst.	-0.077	-0.083	-0.041	-0.041
	(0.057)	(0.061)	(0.093)	(0.100)
Ec. Orient	0.077***	0.072**	0.062*	0.066**
	(0.030)	(0.030)	(0.034)	(0.034)
Allhouse	0.161*	0.139*	0.226**	0.217**
	(0.083)	(0.082)	(0.094)	(0.089)
Plurality	0.005	0.009	-0.056	-0.064
	(0.057)	(0.061)	(0.068)	(0.068)
Proportional	0.109**	0.074	0.142***	0.144***
	(0.051)	(0.062)	(0.043)	(0.043)
Numvote	-0.016	-0.137	0.022	-0.005
	(0.157)	(0.162)	(0.220)	(0.183)
Fractionalization	0.189	0.299**	0.081	0.119
	(0.116)	(0.127)	(0.155)	(0.149)
Polarization	0.065*	0.023	0.069*	0.049
	(0.035)	(0.037)	(0.041)	(0.041)
Democracy	-0.021		-0.005	
	(0.023)		(0.029)	
Log(ADM)	-0.019		-0.003	
	(0.016)		(0.015)	
Observations	192	204	149	160
Sample	AE&EM	AE&EM	AE&EM	AE

Probit Regressions, the dependent variable takes value one for five year episodes with a primary surplus of at least 3% of GDP. The table reports the marginal effects estimated at the mean of the dependent variable. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 6: Primary surpluses, economic and political variables

	(1)	(2)	(3)	(4)	(5)
GDP growth	4.424***	5.279***	3.063**	3.860***	4.742***
	(1.536)	(1.444)	(1.374)	(1.422)	(1.388)
Debt-to-GDP	0.118**	0.086*	0.138**		
	(0.055)	(0.047)	(0.056)		
Log(GDP PC)	0.030	0.030	0.033	0.026	0.027
	(0.024)	(0.021)	(0.023)	(0.024)	(0.021)
Log(GDP)	-0.050***	-0.042***	-0.057***	-0.045***	-0.039***
	(0.016)	(0.015)	(0.017)	(0.015)	(0.014)
Trade openness	-0.060	-0.059	-0.048	-0.068	-0.059
	(0.049)	(0.041)	(0.047)	(0.053)	(0.041)
Current acc. bal.	1.714***	1.632***	1.474***	1.809***	1.642***
	(0.558)	(0.479)	(0.519)	(0.567)	(0.471)
Trading partners' growth	3.287	1.663	5.379**	3.294	1.847
	(2.377)	(2.175)	(2.442)	(2.313)	(2.073)
Trading partners' primary balance	1.948	2.772*	1.487	2.980*	3.446**
	(1.725)	(1.532)	(1.727)	(1.742)	(1.557)
Proportional	0.014	0.036		0.029	0.038
	(0.052)	(0.040)		(0.045)	(0.039)
Ec. orient	0.060**		0.061**	0.049*	
	(0.028)		(0.029)	(0.026)	
Allhouse	0.099	0.089	0.068	0.111	0.090
	(0.068)	(0.063)	(0.061)	(0.068)	(0.063)
Fractionalization	0.063	-0.047	0.083	0.058	-0.057
	(0.088)	(0.081)	(0.089)	(0.093)	(0.080)
Observations	183	207	186	183	207
Sample	AE&EM	AE&EM	AE&EM	AE&EM	AE&EM

Probit Regressions, the dependent variable takes value one for five year episodes with a primary surplus of at least 3% of GDP. The table reports the marginal effects estimated at the mean of the dependent variable (variables are scaled such that 0.0x means x%). Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 7: Primary surpluses during tranquil periods and periods of high and growing debt

	(1)	(2)	(3)
	High and growing debt=1	High and growing debt=0	(2)-(1)
GDP growth	4.858*	3.856	-1.002
	(2.589)	(2.566)	(3.645)
Debt-to-GDP	0.257*	0.124	-0.133
	(0.148)	(0.199)	(0.248)
Log(GDP PC)	0.0494	0.0528	0.00335
	(0.0522)	(0.0523)	(0.0739)
Log(GDP)	-0.0379	-0.0868***	-0.0489
	(0.0348)	(0.0284)	(0.0449)
Trade openness	0.249	-0.129*	-0.378**
	(0.161)	(0.0767)	(0.179)
Current acc. bal.	2.267	2.680***	0.414
	(1.552)	(0.953)	(1.821)
Trading partners' growth	-3.097	10.28**	13.38*
	(5.556)	(4.572)	(7.195)
Trading partners' primary balance	8.783**	-2.327	-11.11**
	(4.281)	(2.351)	(4.884)
Ec. orient	0.159**	0.0528	-0.106
	(0.0616)	(0.0404)	(0.0737)
Allhouse	0.0672	0.0871	0.0199
	(0.125)	(0.0816)	(0.149)
Fractionalization	-0.0977	0.0838	0.182
	(0.263)	(0.150)	(0.303)
Needed		-0.331	
		(0.759)	
Observations		186	
Sample		AE&EM	

Linear probability model, the dependent variable takes value one for five year episodes with a primary surplus of at least 3% of GDP. The table reports the marginal effects estimated at the mean of the dependent variable. Note that the table reports the results of just one regression. The first column reports the coefficients for the variables interacted with the "High and Growing debt" dummy and the second column reports the results for the variable interacted with 1 minus the dummy. The third column reports the difference between the first two columns. Robust standard errors in parentheses, (variables are scaled such that 0.0x means x%) *** p<0.01, ** p<0.05, * p<0.1

Table 8: Instrumental variables regressions

	(1) Probit	(2) Linear probability	(3) Linear probability IH
GDP growth	5.279***	7.206***	10.719***
	(1.444)	(1.642)	(4.098)
Debt-to-GDP	0.086*	0.176**	0.214***
	(0.047)	(0.074)	(0.079)
Log(GDP PC)	0.030	0.029	0.042
	(0.021)	(0.031)	(0.046)
Log(GDP)	-0.042***	-0.058***	-0.067***
	(0.015)	(0.018)	(0.025)
Trade openness	-0.059	-0.034	-0.099
	(0.041)	(0.049)	(0.081)
Current acc. bal.	1.632***	2.327***	3.150***
	(0.479)	(0.581)	(1.197)
Trading partners' growth	1.663	-0.475	-4.385
	(2.175)	(2.707)	(5.013)
Trading partners' primary balance	2.772*	2.176	1.916
	(1.532)	(1.803)	(1.810)
Proportional	0.036	0.050	0.053
	(0.040)	(0.063)	(0.064)
Ec. orient	0.036	0.05	0.053
	-0.04	-0.063	-0.064
Allhouse	0.089	0.132*	0.152**
	(0.063)	(0.070)	(0.074)
Fractionalization	-0.047	-0.104	-0.134
	(0.081)	(0.118)	(0.115)
Rk, LM statistics			12.51
P-value			0.01
Rk Wald F-statistics			4.52
Hansen J statistics			0.71
P-value			0.7
Observations	207	207	207
Sample	AE&EM	AE&EM	AE&EM

The first column reports standard probit regressions similar to those of Table XX. Column 2 estimates the same model of column 1 using a linear probability model, Column 3 estimates the model of column 2 using identification through heteroskedasticity, where GDP growth and the current account balance are treated as endogenous. The dependent variable takes value one for five year episodes with a primary surplus of at least 3% of GDP. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Figure 1: Main Economic and Political Variables
(medians for 5-year, 3% episodes)

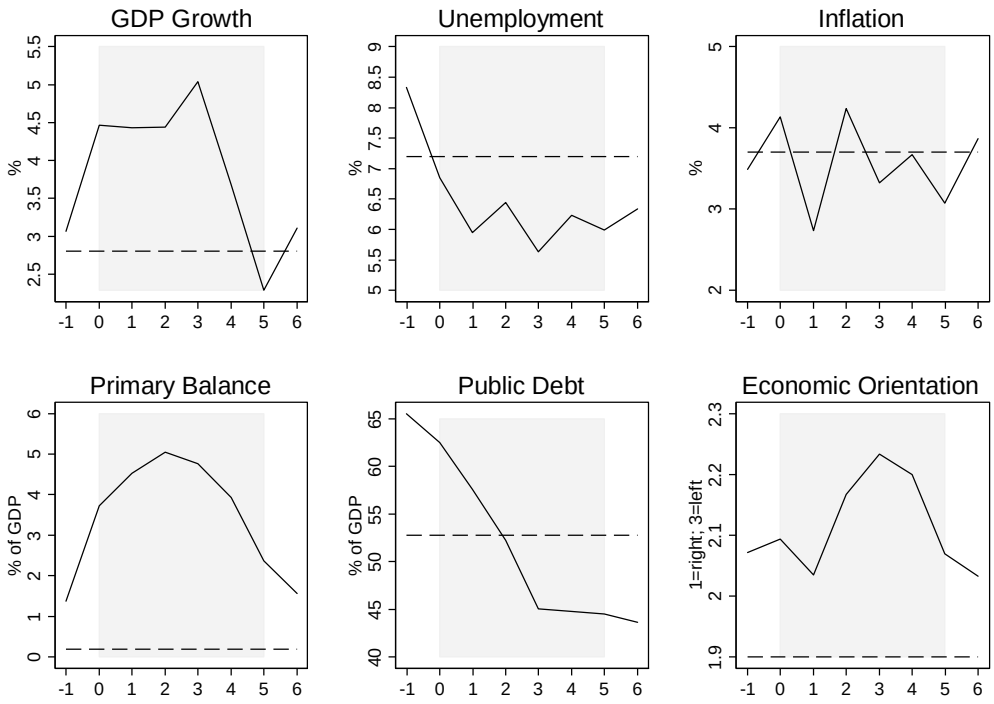
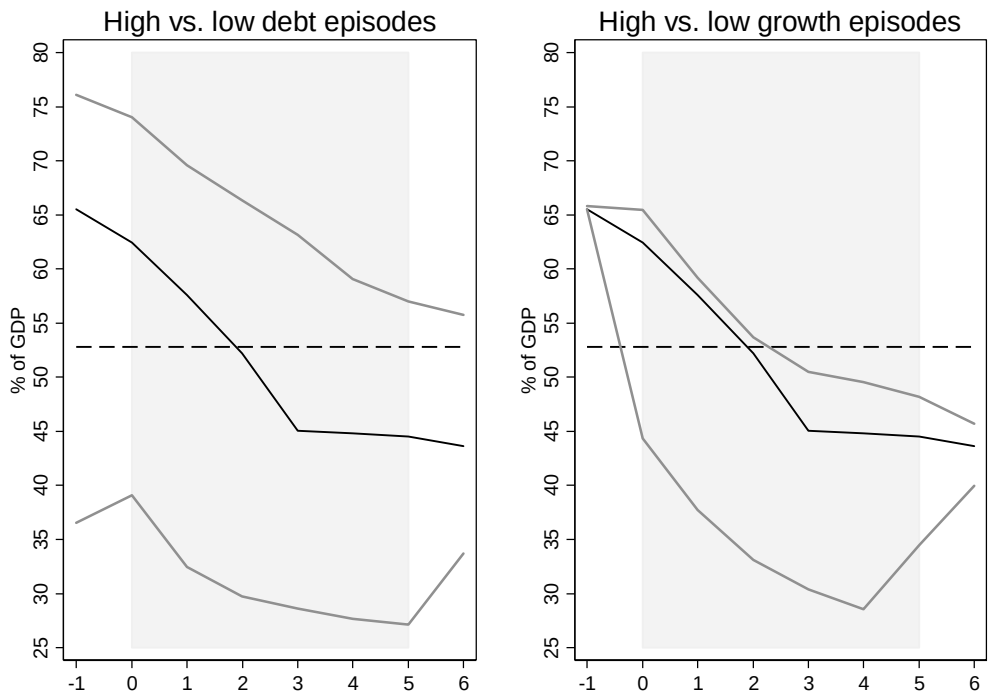


Figure 2: Public Debt (medians for 5-year, 3% episodes)



In both panels, the solid line plots median values for all episodes and the grey lines plot median values for the sub-groups. In the left panel, the upper grey line plots episodes that follow periods of high and growing debt (19 episodes) and the lower grey line plots the remaining 17 episodes. In the right panel, the upper grey line plots episodes that happen during periods of low GDP growth and the lower grey plots episodes that happen during periods of high GDP growth.